

CLAIMS

1. (currently amended) An apparatus for ~~use with a high strength magnetic in~~ detecting a ferromagnetic object approaching the magnet, the apparatus comprising:

guide members defining a path along which persons, who are ~~approaching the magnet and~~ potentially transporting a ferromagnetic object, are prescribed to pass;

the apparatus being arranged for use with a separate high strength magnet of a type which renders ferromagnetic objects potentially dangerous,

said guide members being arranged such that said path is located, in use, in a fringe portion of the magnetic field of the magnet;

at least one sense coil mounted at the guide members,

the at least one sense coil being arranged such that it is located, in use, in the magnetic field of the separate high strength magnet,

the at least one sense, coil being and arranged at a predetermined location and orientation relative to the guide members such that, as a person transporting a ferromagnetic object to be detected passes along the prescribed path; the movement of the ferromagnetic object in the field of the separate high strength magnet causes a voltage to be generated in the at least one sense coil;

and an electrical measuring device for measuring an electrical signal generated by the sense coil when the ferromagnetic object travels in the path, the electrical measuring device being arranged to provide a warning indication when the

electrical signal exceeds a predetermined value.

2. (currently amended) The apparatus according to Claim 1 wherein the at least one sense coil and the guide members are arranged such that the path and field of the separate high strength magnet are, in use, substantially parallel.

3. (currently amended) The apparatus according to Claim 1 ~~or 2~~ wherein the at least one coil provides substantially vertical coil legs at spaced positions along the path.

4. (original) The apparatus according to Claim 3 wherein the substantially vertical coil legs at spaced positions along the path have a height of the order of the height of a person walking along the path.

5. (currently amended) The apparatus according to ~~any one of Claims 1 to 4~~ Claim 1 wherein the at least one coil lies in a plane generally parallel to the path along one side of the path.

6. (currently amended) The apparatus according to any one of ~~Claims 1 to 5~~ Claim 1 wherein the at least one coil includes at least two coils arranged to provide on each side of the path two substantially vertical coil legs at spaced positions along the path.

7. (currently amended) The apparatus according to any one of ~~Claims 1 to 6~~ Claim 1 wherein the at least one coil includes at least two coils, one on each side of the path.

8. (currently amended) The apparatus according to ~~any one of~~

~~Claims 1 to 7~~ wherein ~~the at least one coil~~ each of the two coils ~~includes comprises a~~
set of coils including associated therewith at least one additional coil shaped and
arranged to cancel components of electrical signal generated by fields or
movements outside of the path.

9. (currently amended) The apparatus according to ~~any one of~~
~~Claims 1 to 8~~ wherein each of the ~~at least one coil includes~~ two sets of coils ~~each set~~
is located on a respective side of the path and each set having has the coils thereof
parallel to the path.

10. (original) The apparatus according to Claim 9 wherein each
set of coils includes an outermost largest coil, an intermediate coil smaller than the
outermost coil, and two innermost coils which are each smaller than the intermediate
coil and arranged one above the other.

11. (original) The apparatus according to Claim 10 wherein
each of the coils of the set provides substantially vertical coil legs at spaced
positions along the path with interconnecting top and bottom coil portions lying in a
common plane at the top and bottom of the path.

12. (currently amended) The apparatus according to ~~any one of~~
~~Claims 1 to 11~~ Claim 1 wherein at least one sense coil defines a zone within the at
least one sense coil and there is provided a device for detecting entry of the person
into and departure of the person from the zone.

13. (original) The apparatus according to Claim 12 wherein the
electrical measuring device is arranged to provide an integral of the electrical signal
as the person moves through the zone.

14. (currently amended) The apparatus according to Claim 12 ~~or 13~~ wherein the at least one coil includes two vertical coil legs at spaced positions along the path and the detecting device is arranged at the legs so as to define the zone therebetween.

15. (currently amended) The apparatus according to ~~any one of Claims 1 to 14~~ Claim 1 wherein the at least one coil and the path are mounted on at least one anti-vibration platform.

16. (currently amended) A combination of a high strength magnet and an apparatus for use in detecting a ferromagnetic object approaching the magnet, the apparatus according to ~~any one of Claims 1 to 15~~ Claim 1, ~~wherein the apparatus is mounted in the fringe field of the magnet.~~

ADD NEW CLAIMS AS FOLLOWS

17. (new) An apparatus for use in detecting a ferromagnetic object, the apparatus comprising:

guide members defining a path along which persons, who are potentially transporting a ferromagnetic object, are prescribed to pass;

said guide members being arranged such that said path is located, in use, in a magnetic field;

said guide members and the magnetic field being arranged such that the path and field are substantially parallel;

a pair of sense coil assemblies mounted at the guide members and arranged at a predetermined location and orientation relative to the guide members such that, as a person transporting a ferromagnetic object to be detected passes

along the prescribed path, the movement of the ferromagnetic object in the magnetic field causes a voltage to be generated in the sense coil assemblies;

and an electrical measuring device for measuring an electrical signal generated by the sense coil assemblies when the ferromagnetic object travels in the path, the electrical measuring device being arranged to provide a warning indication when the electrical signal exceeds a predetermined value;

wherein the sense coil assemblies are wound in opposition and connected in series so as to reduce magnetic interference from external sources.

18. (new) The apparatus according to Claim 17 wherein the sense coil assemblies provide substantially vertical coil legs at spaced positions along the path and on opposite sides of the path.

19. (new) The apparatus according to Claim 18 wherein the substantially vertical coil legs at spaced positions along the path have a height of the order of the height of a person walking along the path.

20. (new) The apparatus according to Claim 17 wherein the sense coil assemblies lie in a plane generally parallel to the path along respective sides of the path.

21. (new) The apparatus according to Claim 17 wherein the sense coil assemblies each include a primary coil and at least one secondary coil shaped and arranged to cancel components of electrical signal generated by fields or movements outside of the path.

22. (new) The apparatus according to Claim 21 wherein each of the sense coil assemblies includes an outermost largest primary coil, an intermediate

secondary coil smaller than the outermost coil, and two secondary innermost coils which are each smaller than the intermediate coil and arranged one above the other.

23. (new) The apparatus according to Claim 22 wherein each of the sense coil assemblies provides substantially vertical coil legs at spaced positions along the path with interconnecting top and bottom coil portions lying in a common plane at the top and bottom of the path.

24. (new) The apparatus according to Claim 17 wherein the sense coil assemblies define a zone within the sense coil assemblies and there is provided a device for detecting entry of the person into and departure of the person from the zone.

25. (new) The apparatus according to Claim 24 wherein the electrical measuring device is arranged to provide an integral of the electrical signal as the person moves through the zone.

26. (new) The apparatus according to Claim 17 wherein the sense coil assemblies and the path are mounted on at least one anti-vibration platform.

27. (new) An apparatus for use in detecting a ferromagnetic object, the apparatus comprising:

guide members defining a path along which persons, who are potentially transporting a ferromagnetic object, are prescribed to pass;

said guide members being arranged such that said path is located, in use, in a magnetic field;

a pair of sense coil assemblies mounted at the guide members and arranged at a predetermined location and orientation relative to the guide members

such that, as a person transporting a ferromagnetic object to be detected passes along the prescribed path, the movement of the ferromagnetic object in the magnetic field causes a voltage to be generated in the sense coil assemblies;

and an electrical measuring device for measuring an electrical signal generated by the sense coil assemblies when the ferromagnetic object travels in the path, the electrical measuring device being arranged to provide a warning indication when the electrical signal exceeds a predetermined value;

wherein the sense coil assemblies are wound in opposition and connected in series so as to reduce magnetic interference from external sources;

and wherein the sense coil assemblies each include a primary coil and at least one secondary coil shaped and arranged to cancel components of electrical signal generated by fields or movements outside of the path.

28. (new) The apparatus according to Claim 27 wherein the sense coil assemblies provide substantially vertical coil legs at spaced positions along the path and on opposite sides of the path.

29. (new) The apparatus according to Claim 28 wherein the substantially vertical coil legs at spaced positions along the path have a height of the order of the height of a person walking along the path.

30. (new) The apparatus according to Claim 27 wherein the sense coil assemblies lie in a plane generally parallel to the path along respective sides of the path.

31. (new) The apparatus according to Claim 27 wherein each of the sense coil assemblies includes an outermost largest primary coil, an intermediate

secondary coil smaller than the outermost coil, and two secondary innermost coils which are each smaller than the intermediate coil and arranged one above the other.

32. (new) The apparatus according to Claim 27 wherein each of the sense coil assemblies provides substantially vertical coil legs at spaced positions along the path with interconnecting top and bottom coil portions lying in a common plane at the top and bottom of the path.

33. (new) The apparatus according to Claim 27 wherein the sense coil assemblies define a zone within the sense coil assemblies and there is provided a device for detecting entry of the person into and departure of the person from the zone.

34. (new) The apparatus according to Claim 33 wherein the electrical measuring device is arranged to provide an integral of the electrical signal as the person moves through the zone.

35. (new) The apparatus according to Claim 27 wherein the sense coil assemblies and the path are mounted on at least one anti-vibration platform.